

*On-dock rail, or rails that go all the way onto the docks where ships are unloaded, can significantly reduce pollution by eliminating the need for truck trips to shuttle containers from the docks to a rail yard.*

avoid expanding near residential areas. Where existing terminals are already close to residences, ports must make every effort to minimize noise and light pollution. For example, bright lights used at night should be minimized to the extent possible to avoid glare in the local community.

#### **Low-Profile Cranes**

Ports should use low-profile cranes at marine terminals to improve aesthetics. Gantry cranes, because of their structural size and girth, can greatly impair and degrade the community's view of the harbor. Cranes of a lower profile can be designed upon request to the crane manufacturers, resulting in a product that significantly reduces the aesthetic impact created by conventional gantry cranes. Low-profile cranes can be designed to the same load-lifting capacity and performance standards as conventional gantry cranes, making low-profile cranes as efficient and productive as their conventional counterparts. Currently, there are approximately 33 low-profile cranes in use throughout the world; the largest low-profile crane currently in operation is capable of servicing 16-wide container ships.<sup>114</sup> The Port of Los Angeles is in the process of ordering and purchasing two low-profile cranes capable of servicing post-Panamax 22-wide container ships. The conventional gantry cranes required to service these ships are 300 feet tall when in the stowed position and 360 feet tall when they are extended for occasional maintenance.<sup>115</sup> By contrast, a low-profile crane that would service the same ship can be designed to be no more than 185 feet when in the stowed position and when maintained.

## CHAPTER 3

# IMPROVING LAWS AND REGULATIONS GOVERNING PORTS

The large, industrial, and high-polluting operations at marine ports have an enormous effect on human health and the environment. Ordinarily, such activities would be subject to stringent regulation, but for the most part, oversight of ports falls between the regulatory cracks—defeated by confusion over jurisdictional authority and a strong industry lobby. A patchwork of international, federal, state, and local rules applies to various pollution sources at ports, and most are weak and poorly enforced. This chapter highlights the major rules that apply to port-related activity and offers recommendations for strengthening existing rules and for laying the groundwork for new rules to help clean up U.S. ports.

## INTERNATIONAL TREATIES

Created in 1958, the International Maritime Organization (IMO) promotes and coordinates international maritime safety and ship pollution prevention.<sup>1</sup> The IMO has adopted roughly 40 conventions and protocols to date, covering such topics as preventing oil spill and air pollution from ships. The IMO has 162 member states and serves as an agency under the United Nations. Two noteworthy IMO treaties are a 2001 agreement prohibiting the use of toxic chemical coatings on ship hulls, called the Anti-Fouling Systems (AFS) Convention, and a pollution prevention treaty covering a broad range of marine pollution issues called MARPOL.

MARPOL is the main international convention covering pollution prevention of the marine environment by ships from operational or accidental causes. Updated by additional amendments since its adoption in 1973, MARPOL comprises six “annexes” covering oil pollution (Annex I), noxious liquid substances (Annex II), harmful substances in packaged form (Annex III), sewage pollution (Annex IV), garbage (Annex V), and air pollution (Annex VI). In May 2004, Annex VI of the convention, covering air pollution and cleaner marine fuels, garnered the requisite number of international signatories to lead to its “entry into force” in May 2005. These MARPOL Annexes, the AFS convention, and other treaties, as well as a number of international programs, European Union (EU) directives, the European Union (EU) sustainability policy on transportation, and the ECOPORTS project, are discussed in Appendix D.



## HARBORING POLLUTION

*Strategies to  
Clean Up U.S. Ports*

August 2004

**Recommendation:** The U.S. government should ratify MARPOL Annex VI, thereby retroactively holding January 1, 2000, and later ships to Tier 1 standards.

**Recommendation:** The EPA should expedite efforts to establish the entire East, West, and Gulf coasts as control zones subject to stricter emission standards equivalent to Annex VI's "Sulfur Emission Control Areas," regardless of a marine vessel's flag.

**Recommendation:** The U.S. government should officially ratify MARPOL Annex IV, which prevents sewage pollution from ships, and the Antifouling Systems (AFS) Convention, which bans toxic chemical coatings on ship hulls.

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#### U.S. REGULATIONS, RULES, AND POLICIES

In the United States, state and local governments establish port authorities to manage individual or multiple ports.<sup>2</sup> A complex layering of federal, state, and local laws and regulations governs these port authorities.

Although the federal government has complete jurisdiction over the navigable waters of the United States, its exclusive authority stops at the coastline.<sup>3</sup> In general, port authorities are therefore subject to state laws and regulations, with several important exceptions.<sup>4</sup> Additionally, some local government entities—air districts in California, for example—also have authority to regulate ports in certain ways, such as an "indirect source" of pollution. Jurisdictional issues are further complicated because ports vary widely in their organizational structure, which may take the form of a port authority, a special district, or a department within various levels of government, each presenting its own legal issues.

The following describes the primary federal, state, and local laws and regulations governing pollution sources at ports in the United States.

#### Air Emissions from Marine Vessels

The EPA first issued emission standards for new marine diesel engines in 1996 and revised them in 1999. As part of the 1999 regulation, the EPA adopted voluntary emission standards for small and medium-sized marine vessels (known as Category 1 and 2 vessels) such as tugboats, pushboats, and supply vessels with a 700- to 11,000-horsepower range. The EPA then set more stringent standards to be implemented by 2007.<sup>5,6</sup> However, the 1999 marine rule set no mandatory standards for larger vessels (Category 3 vessels), prompting the Bluewater Network, an independent nonprofit organization, to sue the EPA.<sup>7,8</sup>

In early 2003, the EPA finally adopted mandatory emission standards, known as Tier 1 standards, for Category 3 vessel engines (container ships, oil tankers, bulk carriers, and cruise ships, among others),<sup>9,10</sup> settling on standards equivalent to the internationally negotiated NO<sub>x</sub> limits in MARPOL. Although these standards are a step in the right direction, they are weak and do not address particulate matter, carbon monoxide, or VOCs.<sup>11</sup> Beginning January 1, 2004, the standards will apply to small and medium-sized marine vessels, as well as to the larger oceangoing

*Although the federal government has complete jurisdiction over the navigable waters of the United States, its exclusive authority stops at the coastline.*

Category 3 marine vessels.<sup>12</sup> Ratification of Annex VI retroactively holds January 1, 2000, and later ships to Tier 1 standards.

Tier 1 standards, expected to reduce NO<sub>x</sub> emissions by 20 percent, apply only to new marine diesel engines installed on U.S.-flagged or registered vessels and will do nothing to clean up existing ships.<sup>13</sup> However, in anticipation of global ratification of this portion (Annex VI) of the MARPOL treaty, many manufacturers worldwide have been achieving these standards.<sup>14,15</sup>

The EPA's 2003 ruling also sets the maximum sulfur content of marine diesel fuel at 45,000 parts per million and commits the EPA to the 2007 implementation of more stringent, Tier 2 standards for Category 1 and 2 marine vessels, as well as the adoption of Tier 2 standards for Category 3 marine vessels by mid-2007.<sup>16</sup> The Tier 2 standards will include emissions standards on particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs).<sup>17</sup> (See the Table of Emission Standards in Appendix B.)

**Recommendation:** The EPA should expedite implementation of Tier 2 emission standards for Category 1, 2, and 3 marine vessels within two years, and the new standards should be applied to all vessels.

#### ***Air Emissions from Locomotives***

In 1998, the EPA finalized new emission standards for newly manufactured locomotives and remanufactured locomotives from model year 1973 and later.<sup>18</sup> The rule sets requirements for NO<sub>x</sub>, VOCs, CO, PM, and smoke, as required under the Clean Air Act. The rule has been criticized by environmental and public health groups for requiring only minimal reductions in NO<sub>x</sub> and PM for highly polluting locomotives built before 2000, given available emission reduction technologies.<sup>19</sup> (See the Table of Emission Standards in Appendix B for locomotive standards and estimated emission factors.)

**Recommendation:** The EPA should implement the next tier of emission standards (Tier 3) for locomotives within one year.

#### ***Air Emissions from On-Road Trucks***

The EPA's "2007 on-highway" emission standards for heavy-duty vehicles and engines will require diesel transport trucks to be roughly 90 to 95 percent cleaner than today's models by 2010.<sup>20</sup> Impressive though these percentages sound, the regulation applies only to new trucks in model years 2007 and later. Given the longevity of diesel heavy-duty trucks, which have a useful life of at least ten years, the reality is that the regulation does not address the older, heavily polluting diesel trucks predominantly serving ports nationwide. (See the Table of Emission Standards in Appendix B.)

**Recommendation:** The EPA must follow through with full implementation of its 2007 emissions standards for on-road heavy-duty trucks.

### Air Emissions from Nonroad Engines

In May 2004, the EPA adopted a rule that would clamp down further on diesel engine emissions by setting tough engine standards for nonroad vehicles, including industrial, farm, and construction equipment. The nonroad rule extends the model of the EPA's most recent on-road truck rule to the nonroad sector—requiring ultra-low-sulfur diesel fuel nationwide, followed eventually by stringent, after-treatment-based PM and NO<sub>x</sub> standards. Nonroad engines are used in cargo-handling equipment at ports, such as yard hostlers, top-picks, and side-picks, and are a major source of polluting emissions. The new regulations are sorely needed. Until 1996, emissions from this category of equipment were entirely unregulated—several decades after the first standards for on-road trucks and buses took effect.<sup>21</sup>

The new EPA rule will reduce the sulfur levels in nonroad diesel fuel from today's average of more than 3,400 parts per million (ppm) to 500 ppm in 2007, and then to 15 ppm in 2010.<sup>22</sup> Lowering sulfur levels is crucial to cleaning up diesel because sulfur inhibits—and can even destroy—advanced emission control systems for diesel engines, just as lead in gasoline disables catalytic converters. In addition to the considerable near-term savings in polluting emissions, the proposal will require engine manufacturers to meet increasingly stringent engine emissions standards over the 2008–2015 timeframe using a variety of advanced emission control strategies. Table 3-1 lists the new emissions standards.

The new rule will also reduce sulfur levels in diesel fuel used in locomotives and all but the largest marine diesel engines to 500 ppm in 2007 and to 15 ppm by 2012, and this in turn will reduce sulfate PM from the existing fleet of these engines by

**TABLE 3-1**  
Estimated Pollutant Reductions from the Proposed Tier 4 Emission Standards, g/bhp-hr

Engine Power	Year	NMHC	NMHC+NO <sub>x</sub>	NO <sub>x</sub>	PM
HP < 25	2008	—	—	-	0.30 <sup>a</sup>
25 ≤ HP < 75	2013	—	3.5	-	0.022 <sup>b</sup>
75 ≤ HP < 175	2012–2014 <sup>c</sup>	0.14	—	0.30	0.015
175 ≤ HP ≤ 750	2011–2014 <sup>d</sup>	0.14	—	0.30	0.015
HP > 750	2015 <sup>e</sup>	0.14	—	0.5/2.6 <sup>f</sup>	0.022/0.03 <sup>g</sup>

Source: Diesel Net, "Emission Standards: USA: Nonroad Diesel Engines," 2004, [www.dieselnets.com/standards/us/offroad.html](http://www.dieselnets.com/standards/us/offroad.html) (28 May 2004).

Note: These standards will drastically clean up nonroad equipment. Compared with on-road heavy-duty vehicle standards, they are almost as stringent.

NMHCs are non-methane hydrocarbons similar to VOCs.

a. Hand-startable, air-cooled, DI engines below 11 HP can continue to meet Tier 2 PM standards in 2008 and an optional standard of 0.45 g/bhp-hr in 2010.

b. Interim PM standard of 0.22 g/bhp-hr effective 2008; interim standard is 0.3 g/bhp-hr for manufacturers that meet the 2013 standard one year early.

c. 2012–2013: full PM compliance, 50% phase-in engines meet NO<sub>x</sub>/VOCs (phase-out NMHC+NO<sub>x</sub> < 3.0 g/bhp-hr).

d. 2011–2013: full PM compliance, 50% phase-in engines meet NO<sub>x</sub>/VOCs (phase-out NMHC+NO<sub>x</sub> < 3.0 g/bhp-hr).

e. Interim NMHC standard of 0.3 g/bhp-hr from 2011–2014.

f. Generator sets must meet the 0.5 g/bhp-hr NO<sub>x</sub> standard and all other engines in this size range must meet the 2.6 g/bhp-hr NO<sub>x</sub> standard; all engines > 1200 HP must meet their respective standard from 2011–2014.

g. Generator sets must meet the 0.22 g/bhp-hr PM standard and all other engines in this size range must meet the 0.03 g/bhp-hr PM standard; all engines > 1200 HP must meet an interim standard of 0.07 from 2011–2014.

more than 80 percent.<sup>23</sup> Currently, locomotives run on diesel fuel with sulfur levels that often exceed the 3,400 ppm nonroad national average.

The benefits of the new rule are significant. The EPA estimates the rule will provide nearly \$80 billion in net benefits when the program is fully implemented. The EPA further estimates that the cost of adding advanced emission controls to a 175-horsepower bulldozer will be roughly 1 percent of the \$230,000 purchase price. Without these controls, the same bulldozer would emit as much soot and smog-forming pollutants as 26 new cars. Most notably, this rule will prevent 9,600 premature deaths each year.<sup>24</sup>

**Recommendation:** The EPA must follow through with full implementation of its recent nonroad emissions and fuel standards, including all locomotive and marine fuel requirements.

#### **Stormwater Pollution**

Under the federal Clean Water Act, operators of marine port terminals are required to obtain national pollution discharge elimination system (NPDES) permits for what are considered point source discharges to waterbodies, or pollution emanating from a confined, discrete source, such as a pipe, ditch, tunnel, well, or floating craft.<sup>25</sup> These regulated point sources primarily include stormwater runoff from paved terminals and facilities. In 1987, nonpoint sources—those water discharges that do not come from an identifiable pipe or outfall—became subject to a revised regulatory approach as well.

Stormwater permits are issued either through one of the EPA's 10 regions or through an authorized state or territorial authority. Permits must, at a minimum, meet federal standards, although individual state programs are permitted to be more stringent or to alter certain procedures.<sup>26</sup> Stormwater permit holders must monitor pollution levels in receiving waters to prove that they are within allowable levels, implement a stormwater pollution prevention plan (SWPPP), and perform facility inspections, among other requirements. Appendix C contains a comprehensive description of a model water quality program under an NPDES permit and describes elements beyond permit requirements.

**Recommendation:** The EPA should issue effluent guidelines to require a general baseline level of pollutant reduction for port facilities or for those pollutants typically found in port runoff.

**Recommendation:** States should ensure that anti-degradation provisions of federal and state law are fully implemented in stormwater permits.

**Recommendation:** States should give special attention to the development of total maximum daily loads (TMDLs) for impaired waters around many ports.

**Recommendation:** Local governments should prioritize port facilities when designing inspection protocols in conjunction with local regulatory programs and implementation of municipal stormwater permits.

*The EPA's nonroad rule will prevent 9,600 premature deaths each year.*

**Ballast Water**

The federal government maintains no mandatory ballast water discharge requirements other than that ships entering U.S. waters must file a report detailing their ballast water management practices.<sup>27</sup> What those practices entail is not regulated, and a regimen of voluntary guidelines has proved largely inadequate.<sup>28</sup> The EPA recently announced it would not regulate ballast water discharges from ships, deferring to the U.S. Coast Guard, and in the summer of 2003, the Coast Guard began developing a nationwide rule.<sup>29</sup> A final, mandatory national ballast water management program rule is expected by summer 2004.<sup>30</sup>

**Recommendation:** The U.S. Coast Guard must finalize mandatory national ballast water regulations as quickly as possible and no later than the expected summer 2004 completion date.

**Waste Discharge**

Various state and federal regulations prohibit marine vessels from dumping sewage, toxics, and oil in U.S. waters. For example, all ships with toilets must have sewage-treatment equipment, called marine sanitation devices. Within three miles of the U.S. coast, ships may then either discharge the treated sewage or store it for later disposal at a shoreside pumpout facility.<sup>31</sup> Outside the three-mile coastal U.S. territorial water limit, ships are allowed to discharge untreated sewage. In addition, the EPA has designated more than 50 "no discharge zones" (NDZs), in which all sewage discharge, treated or not, is prohibited. About half of these NDZs are located in salt or estuarine waters, which are important to marine habitats.<sup>32</sup>

**Recommendation:** The EPA should consider more stringent requirements on the dumping of wastes containing oxygen-depleting nitrogen and phosphorous, as well as persistent toxic compounds, that continue to threaten marine life.

**Spill Prevention**

Under a national contingency plan for oil spills, the EPA is the lead federal response agency for spills in inland waters, and the U.S. Coast Guard is the lead response agency for spills in coastal waters and deepwater ports. After the 1989 *Exxon Valdez* accident, Congress enacted the Oil Pollution Act of 1990, mandating the phase-in of requirements for double-hulled protection for all tankers in U.S. waters between 1995 and 2015.<sup>33</sup>

In 2003, U.S. Representative Lois Capps (D-CA) introduced the Stop Oil Spills Act (H.R. 880), which would accelerate the phase-in of double-hulled tankers in U.S. waters by 2007, create a 100-mile coastal safety zone, and implement financial incentives for double-hulled tanker use.<sup>34</sup> The bill has been referred to the House Committee on Transportation and Infrastructure's Subcommittee on Coast Guard and Maritime Transportation but has seen no action since February 2003.

Additionally, to prevent oil spills on land, the EPA conducts on-site facility inspections and requires owners or operators of certain port-based oil storage facilities to prepare

*Outside the three-mile coastal U.S. territorial water limit, ships are allowed to discharge untreated sewage.*

and implement spill prevention control and countermeasure plans.<sup>35</sup> One important misconception about oil spills is that the majority is the result of collisions or grounding accidents. Studies have shown that more than 70 percent of oil spills occur during such routine, day-to-day operations in ports and harbors as loading, discharging, bunkering, and various industrial processes. These spills include those caused by human error, such as not ensuring correct hose connections, or mechanical failures.

**Recommendation:** Congress should pass the Stop Oil Spills Act (H.R. 880) to accelerate the phase-in of double-hulled tankers in U.S. waters by 2007.

#### ***Oily Bilge Water***

National and international regulations prohibit the dumping of water that contains 15 parts per million or more of oil, or that has an oily sheen.<sup>36</sup> Instead, the Clean Water Act requires ships to retain on-board the oily mixtures that collect from engine rooms, called bilge water, then and discharge it at onshore reception facilities.<sup>37</sup> Most ships either have a bilge pipe system for this purpose or an on-board oil-water separator.<sup>38</sup>

#### ***Toxic Waste Disposal***

The Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 bans the ocean disposal of many harmful wastes, including radiological, medical, and industrial wastes. Other materials may be dumped with permits, including wastes that contain oxygen-depleting nitrogen and phosphorous, as well as persistent toxic compounds, both of which are a threat to marine life.<sup>39,40</sup>

#### ***Other Federal Programs***

In January 2003, the EPA and the National Oceanic and Atmospheric Administration (NOAA) signed a memorandum of understanding (MOU) expediting the cleanup of local brownfields to revitalize the aging port city of New Bedford, Massachusetts.<sup>41</sup> The memorandum laid the groundwork for the two agencies to work together to clean up brownfields in coastal communities. Later in 2003, NOAA announced the "Portfields" initiative, partnering with a number of federal agencies, including the EPA, working with port communities to revitalize waterfront areas to improve marine transportation such as barges and restore and protect habitat.<sup>42</sup> In addition to New Bedford, two other port cities will receive federal support for brownfield cleanup: Bellingham, Washington, and Tampa, Florida.

The EPA also started the port environmental management system (EMS) assistance project in 2003, in collaboration with the American Association of Port Authorities (AAPA) and the Global Environment and Technology Foundation (GETF).<sup>43</sup> Eleven ports—including the ports of Houston, Hampton Roads, New York and New Jersey, and Los Angeles—will receive two years of EMS training and technical assistance. Each participant is expected to "analyze, control, and improve the environmental consequences of its activities" in order to improve overall environmental performance.

The Marine Mammal Protection Act was first enacted in 1972 to protect and manage marine mammals.<sup>44</sup> Since then, various governmental agency programs

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and regulations have addressed the subject.<sup>45</sup> For example, in an effort to reduce the number of collisions between ships and the critically endangered northern right whale, NOAA and the U.S. Coast Guard implemented Mandatory Ship Reporting Systems in 1999 to prevent future strikes.<sup>46</sup>

#### **Recommended Actions Warranting Further Investigation**

In addition to the recommendations listed earlier, many other avenues exist to address pollution from port operations at the national level. Following is a short list of additional actions that warrant further investigation, some of which have already demonstrated success in other parts of the world.

**Recommendation:** The U.S. government should adopt and support a sustainable transportation system program, similar to the EU program, facilitating the shift of cargo transport from more polluting modes such as trucking to cleaner locomotive and barge transport.

**Recommendation:** The EPA should implement a graduated harbor fee system similar to a program in Sweden that requires polluting ships to pay on a sliding scale (the more polluting, the higher the fees upon entering a port).

**Recommendation:** The EPA and individual states should consider charging fees on each container entering a port, and use these funds to mitigate the environmental effect of moving those containers.

**Recommendation:** All levels of government—federal, state, regional, and local, including environmental agencies—should encourage the utilization of rail instead of less efficient trucks, particularly for long-distance landside cargo movement.

*California and Washington have ballast water programs that are much more stringent than the federal voluntary practices.*

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#### **STATE LAWS, REGULATIONS, AND INCENTIVE PROGRAMS**

Some states maintain and enforce regulations for their ports that go beyond federal requirements.

##### **Ballast Water**

California, Hawaii, Maryland, Michigan, Oregon, Virginia, and Washington have taken the initiative to expand ballast water regulations beyond the federal requirements. In particular, California and Washington have programs that are much more stringent than the federal voluntary practices.<sup>47</sup> California requires ships coming from more than 200 miles off U.S. coasts—that is, from outside the nation's exclusive economic zone (EEZ)—to replace ballast water in tanks while still outside the EEZ (a practice called "open ocean exchange") or to retain ballast inside the EEZ (in other words, banning dumping of ballast water within 200 miles of the coast). The state also requires ships to avoid taking on ballast water in polluted areas, to clean ballast tanks and anchors, and to minimize discharge.<sup>48</sup> Similarly, Washington state makes the requirements in the

voluntary federal program mandatory and requires open ocean exchange of ballast water prior to discharging ballast in state waters. California and Washington have ballast water programs that are much more stringent than the federal voluntary practices.<sup>49</sup>

**Recommendation:** States should adopt ballast water regulations similar to those in place in California and Washington, ensuring a 200-mile buffer from the U.S. coast and making the voluntary federal program mandatory.

#### **Truck Idling Limits**

A number of states and cities have rules or ordinances limiting vehicle idling, a source of unnecessary pollution from diesel engines. A 2002 California law limits idling outside marine terminals to 30 minutes unless the terminal implements an appointment system for trucks or extends open gate hours significantly.<sup>50</sup> Since implementation of this program in July 2003, however, complaints have arisen about queues being moved inside terminal gates to circumvent the law and avoid penalties.

**Recommendation:** The EPA should set uniform federal idling limits for all diesel engines. In the absence of federal action, states or local authorities should require idling limits.

#### **Air Emissions Reduction Incentive Programs**

California's Carl Moyer Program provides incentives for the reduction of NO<sub>x</sub> and PM from heavy-duty diesel engines. These incentives—\$98 million worth to date—are in the form of grants for private companies, public agencies, or individuals operating heavy-duty diesel engines, and they cover an incremental portion of retrofitting or repowering on-road, off-road, marine, locomotive, and agricultural irrigation pump engines. Under the program, most of the 45 tugboats operating at the ports of Long Beach and Los Angeles have been repowered with cleaner diesel engines, reportedly reducing aggregate NO<sub>x</sub> emissions by more than 80 tons per year, about what 4,600 passenger vehicles emit each year.<sup>51,52,53</sup>

Several other states and the EPA maintain similar programs.<sup>54</sup> The Texas Emission Reduction Program (TERP) is an incentive program, begun in 2001, to reduce emissions from diesel engines by funding the incremental cost associated with cleaner engines, engine repowers, addition of control technology, use of cleaner fuels, infrastructure for cleaner fuels, and the demonstration of new technology.<sup>55</sup> The roughly \$20 million per year program is funded through various fees and surcharges on motor vehicle sales, leases, inspections, and registrations.

**Recommendation:** States should provide incentive programs to reduce pollution from heavy-duty diesel engines, similar to the Carl Moyer and TERP programs. In the absence of state action, regional authorities should sponsor such programs.

#### **The California Diesel Risk Reduction Plan: In-Use Diesel Engine Cleanup**

After identifying diesel PM as a toxic air contaminant in 1998, the CARB produced a diesel risk reduction plan two years later to outline the steps necessary to control

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diesel PM from engines and vehicles throughout the state. The plan called not only for cleaner engine and fuel standards but also for the cleanup of existing or in-use engines, through early retirement, retrofits, repowers, or conversions to alternative fuels. Rules passed under the plan so far have covered transit buses, refuse haulers, transportation refrigeration units, portable diesel engines, and stationary diesel engines. However, a number of rules are expected in 2004 and 2005 that will help clean up port-related activities. These include proposed rules for cleaner harbor craft, oceangoing vessels, and cargo-handling equipment, as well as various idling restrictions. A maritime working group is currently investigating various methods to reduce pollution from oceangoing vessels, including a demonstration project of a retrofit technology added to an oceangoing vessel in 2004.

**Recommendation:** The EPA should adopt a series of diesel retrofit rules, similar to those proposed in the California Risk Reduction Program, to establish a cleanup schedule for existing polluting diesel engines. In the absence of federal action, states or local authorities should adopt these programs.

*California's ARB is slated to propose rules for cleaner harbor craft, oceangoing vessels, and cargo-handling equipment, as well as various idling restrictions.*

#### **West Coast Governors' Initiative**

In September 2003, the governors of California, Oregon, and Washington announced the West Coast Governors' Initiative, a collaborative effort to combat greenhouse gas emission.<sup>56</sup> This initiative could serve as a platform for the West Coast to harmonize air quality efforts around interstate trade issues. Uniform requirements across multiple ports would eliminate economic competitive advantages from less stringent requirements.

Discussions are under way with British Columbia, and many are hopeful that Mexico will consider joining as well, creating a full Pacific Coast Initiative. California, Oregon, and Washington meet quarterly with the goal of producing a status report by September 2004. At the time of this writing, there was a significant chance that the maritime component of the governors' initiative would roll into a program initiated by the U.S. EPA Regions 9 and 10 to clean up diesel pollution on the West Coast. This initiative, called the West Coast Diesel Emission Reduction Collaborative, began in June 2004 to identify projects, which could include shoreside power and diesel truck-stop electrification.

**Recommendation:** Neighboring states should work together in coastal alliances to protect their marine natural resources, share information on programs and technologies, and work together to jointly shoulder the neglected responsibility to neighboring communities and their surrounding environment.

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#### **LOCAL ORDINANCES AND FUNDING**

Some local jurisdictions have ordinances of their own governing pollution at their ports.

#### **Oil Pollution**

Congress adopted the Oil Pollution Act of 1990 to improve prevention and response to catastrophic oil spills. The act requires detailed facility and regional oil spill

contingency plans and sets aside funds for emergency cleanup, financed by a tax on oil. Some individual ports have joined in this effort as well. For example, the Port of Oakland's Clean Water Program establishes training programs for monitoring storm-water runoff and for preventing oil pollution from becoming a part of runoff. Several ports have also established oil-recycling programs.<sup>57</sup>

**Recommendation:** Regional authorities should require ports to ensure that oil pollution does not become a part of runoff and that portwide oil-recycling programs are in place. Even more effort should be focused on oil spill prevention, in addition to response, in order to prevent irreversible damage to ecosystems.

#### ***Locomotive Memorandum of Understanding***

Although the Clean Air Act prohibits certain state and local governments from adopting or enforcing requirements controlling emissions from new locomotives or new engines used in locomotives, nothing prohibits local or state agencies from entering into agreements or memoranda of understanding to provide incentives for locomotive companies to operate cleaner engines in a given region.<sup>58</sup> In California, CARB and participating railroads entered into one such MOU in 1998 with the goal of accelerating introduction into the South Coast Nonattainment Area<sup>59</sup> (Los Angeles, Orange County, and parts of San Bernardino and Riverside counties) newer, lower-emitting locomotives by establishing a locomotive fleet average emissions program. The MOU will result in an additional 35 percent reduction in NO<sub>x</sub> emissions beyond the federal regulation and a 100 percent scrappage or replacement with lower-emitting locomotives by 2010.<sup>60,61</sup>

**Recommendation:** States should negotiate MOUs that create incentives for cleaner locomotives. In the absence of state action, regional authorities should pursue this.

#### ***Voluntary Commercial Cargo Ship Speed Reductions Memorandum of Understanding***

In an effort to address the significant public health concern from air pollution in the South Coast Air Basin and to assist in attainment of air quality pollution goals, the ports of Long Beach and Los Angeles in 2000 entered into an MOU with local, state, and federal regulatory agencies and participating steamship associations.<sup>62</sup> The agreement sets a 12-knot speed limit within 20 nautical miles of the coast, which the Port of Los Angeles claims has reduced emissions of NO<sub>x</sub> by approximately 1 ton per day at the port.

**Recommendation:** Regional authorities should monitor and enforce ship speed reduction programs.

#### ***City of Los Angeles Alternative Maritime Power Memorandum of Understanding***

In 2002, the City of Los Angeles signed MOUs with six shipping lines to participate in the development of the Alternative Maritime Power (AMP) program at the Port of Los Angeles. These MOUs acknowledge the signatories' intent to research and develop

*The City of Los Angeles recently signed multiple agreements with shipping lines to promote the use of cleaner, lower-sulfur marine fuel for ships docked or hoteling at the Port of Los Angeles.*

an electric infrastructure that would allow vessels to plug in to electric power while at berth (shoreside power). This program is just getting started with implementation at the China Shipping terminal as a result of litigation relating to the expansion. In fact, the first container ship in the world plugged in to electric power at the China Shipping terminal as this report was going to print (see "China Shipping Plugs In," page 25).

**Recommendation:** States should require that ships plug in to shoreside power while docked. In the absence of state action, regional authorities should build infrastructure for and require that ships plug in to shoreside power while docked.

#### **City of Los Angeles Cleaner Marine Fuels Initiative**

The City of Los Angeles recently signed multiple agreements with shipping lines to promote the use of cleaner, lower-sulfur marine fuel for ships docked or hoteling at the Port of Los Angeles. The agreements are in lieu of full-scale implementation of an alternative maritime power program. According to the Port of Los Angeles, one shipping line is currently using lower-sulfur diesel with a 2,000 parts per million sulfur content.<sup>63</sup>

**Recommendation:** States should require that ships use low-sulfur diesel while in coastal waters and at berth (until electric power is made available). In the absence of state action, regional authorities should require this.

#### **New York City Clean Construction Rule**

A December 2003 rule in New York City will require most construction equipment in that city to use low-sulfur diesel (15 ppm) and the best available pollution control technology. Although this rule does not cover the Port Authority of New York and New Jersey because it is a bistate authority, the port voluntarily agreed to abide by it during construction activities. Under this rule, pollution from diesel construction equipment is reduced by as much as 90 percent.

#### **Fleet Rules**

The South Coast Air Quality Management District (SCAQMD) is in the process of developing a rule (Proposed Rule 1198—Intermodal Equipment) that would reduce emissions from yard tractors at South Coast ports.<sup>64</sup> The rule is still in development and the SCAQMD is considering different options for regulation, including limits on operations, required use of cleaner fuels, and a requirement that fleet operators purchase only new, alternative-fuel tractors.

**Recommendation:** States and regional authorities should adopt fleet rules to clean up and require cleaner new purchases of all heavy-duty engines, similar to those in place in the Los Angeles area.

#### **Gateway Cities Incentive Program**

The Gateway Cities program in Southern California, funded by federal, regional, and state dollars, provides funding to operators who replace pre-1984 model year trucks

*A December 2003 rule in New York City will require most construction equipment in that city to use low-sulfur diesel (15 ppm) and the best available pollution control technology.*

with 1994 model year or newer trucks equipped with a diesel oxidation catalyst.<sup>65</sup> The expense is shared by the program and drivers. Regularly oversubscribed, this program has provided approximately \$15 million to local companies and is responsible for the modernization of more than 200 trucks servicing the ports of Long Beach and Los Angeles. This effort has resulted in an annual reduction of 160 tons of NO<sub>x</sub> and 40 tons of particulate matter.<sup>66</sup> The program is an extremely cost-effective way to reduce truck emissions at ports, particularly because most 1983 and earlier trucks have no emissions controls whatsoever.

In addition to the recommendations listed earlier, local and regional governments can adopt the following recommendations to further reduce or prevent degradation from port operations.

**Recommendation:** Regional authorities should improve efforts to protect marine habitats from further infill due to port developments.

**Recommendation:** Regional authorities should improve efficiency and land use in order to alleviate the need to expand facilities.

**Recommendation:** Regional authorities should minimize the effects of terminals on local communities, by rerouting or otherwise mitigating terminal-related traffic.

In summary, the recommendations in this report, if implemented, could reduce port-related pollution affecting seaside communities and marine environments.

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